REMARKS

Claims 1, 5, 6, 12, 16, 18, and 19 are now pending in the application. Independent Claim 5 is currently amended. The added limitation recited in the last paragraph of amended Claim 5 is substantially recited in, for example, Claim 1. Moreover, the phrase "optical <u>networks</u>" has been replaced with the phrase "optical <u>network</u>" as recited in Claim 1. Support for these amendments can be found, for example, in FIG. 1 of the present application. No claims are cancelled or newly added by this amendment. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1, 16, 18, and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Xu, et al., "A BGP/GMPLS Solution for Inter-Domain Optical Networking," ETF Draft, June 2002 ("Xu") in view of Ould-Brahim, et al., "BGP/GMPLS Optical/TDM VPNs," IETF Draft, November 2001, pp. 1-18 ("Ould-Brahim"), Rajagopalan, et al., "IP over Optical Networks: A Framework – Second Draft Version," 6 June 2002, Internet Engineering Task Force, pp. 1-41 ("Rajagopalan") and Kompella, et al. "OSPF Extensions in Support of Generalized MPLS," Network Working Group – Internet draft, July 2001, pp. 1-9 ("Kompella"). This rejection is respectfully traversed.

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Xu in view of Ould-Brahim, Rajagopalan, Kompella, Jagannath (U.S. Pat. No. 6,483,833 B1; "Jagannath"), and Francisco, et al. "Interdomain Routing in Optical Networks,"

Proceedings of SPIE Opticomm, August 2001, pp. 1-10 ("Francisco"). This rejection is respectfully traversed.

Claims 6 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Rosen, et al., "Multiprotocol Label Switching Architecture," Internet Engineering Task Force, July 2000 ("Rosen") in view of Sasagawa (U.S. Pat. No. 7,336,648 B1; "Sasagawa"), Xu, and Braun, et al., "Management of Quality of Service Enabled VPNs," Communications Magazine, IEEE, Vol. 39, No. 5, pp. 90-98, May 2001 ("Braun"). This rejection is respectfully traversed.

Independent Claim 1

The following are arguments with respect to the Examiner's assertions newly presented in the outstanding Office Action.

With respect to the claimed limitation that "the optical network control instances are provided so as to be used by all the external IP networks", the Examiner asserts that Xu discloses that CAG (client access group) information for all client networks are exchanged among BNEs (border network elements) within a provider network as shown, for example, in FIG. 1 of Xu (page 6, Item i of the Office Action). However, each client BNE of Xu registers a CAG route with a neighboring provider BNE that is directly connected to each client BNE itself (see, for example, page 16, section 7.4 (1), first paragraph of Xu). The CAG route is then exchanged among provider BNEs based thereon. Therefore, Xu fails to disclose or suggest that a plurality of provider BNEs are used by all the client BNEs. As such, Xu neither discloses nor suggests the foregoing claimed limitation.

Similar to the claimed optical network control instance, the claimed IP network instance is provided in each optical edge router. By providing both the IP network instance and the optical network control instance in each optical edge router, it is possible to realize multi-layer cooperation. Moreover, as recited in Claim 1, the optical edge routers are provided in the optical network, and the external IP networks are connected to the optical network. In other words, the IP network instances are present in the optical network, which is provided independent of the external IP networks.

In view of the Examiner's assertions on page 6, Item j of the Office Action, Applicants believe that the Examiner asserts that an entity corresponding to the claimed IP network instance is present in a client network of Xu (e.g., see the asserted phrase "... IP network control instances... if they are members of the same client network" and the asserted phrase "... client B will not receive information from client A's IP network instances..."). Moreover, on page 4, Item d of the Office Action, the Examiner asserts that an IP network instance maintains a routing table and that routers A2, A3, A5, and A7 of Xu, which are provided in the client networks as shown in FIG. 1 of Xu, maintain standard IP routing tables. The Examiner thereby attempts to equate the claimed IP network instance with the routers such as the router A2 of Xu. However, these assertions are irrelevant to the foregoing claimed limitation that the claimed IP network instance is provided in each optical edge router.

Moreover, even if it is assumed that an entity corresponding to the claimed IP network instance were present in the provider network of Xu and that the client B of Xu would not receive information relating to the client A as asserted by the Examiner, this merely suggests that a provider X shown in FIG. 1 of Xu does not provide information to

some clients. Xu fails to disclose or suggest that entities corresponding to the claimed IP network instances, which are independent of each other, are present in the provider X of Xu.

Summarizing the recitations on page 7, second and third paragraphs and page 52, first paragraph of the Office Action, Applicants believe that the Examiner asserts that there are a plurality of provider networks as shown, for example, in FIG. 1 of Xu (i.e., "not" a single provider network) but, in view of Ould-Brahim, it would have been obvious to configure Xu to employ such a structure. However, the aforementioned deficiency of Xu is irrelevant to whether or not it is possible to integrate a plurality of provider networks into a single provider network. Therefore, even if it were possible to combine Ould-Brahim with Xu, Ould-Brahim cannot remedy the deficiency of Xu.

Independent Claim 5 (Xu)

Claim 5 is directed to a computer program that corresponds to an optical edge router in Claim 1 directed to an optical network. Moreover, most of the Examiner's assertions newly presented for Claim 5 are similar to those newly presented for Claim 1 described above (see, for example, page 36, Item c and page 37, first and second paragraphs of the Office Action). Therefore, the foregoing arguments with respect to Claim 1 can be applied to Claim 5.

However, similar to Claim 1, Claim 5 recites the phrase "the IP network instance of the optical edge router", which means that the optical edge router includes the IP network instance, but, unlike Claim 1, Claim 5 does not explicitly recite the relationship among the optical edge router, the optical network, and the external IP networks.

Therefore, as recited in Claim 1, Claim 5 has been amended as described above so as to recite that the optical edger routers are provided in the optical network that is provided independent of the external IP networks.

With respect to the Examiner's assertion on page 35, Item a of the Office Action, the Examiner relies upon routers A2, A3, A5, and A7 of Xu, which are client BNEs, and the route between routers A1 and A2 of Xu, with respect to the functions of exchanging route information and of producing a routing table that provide the claimed IP network instance of the claimed optical edge router. Therefore, the foregoing arguments with respect to Claim 1 can be applied to this assertion.

With respect to the Examiner's assertion on page 36, Item b of the Office Action, the Examiner merely cites part of the recitation of Claim 5, which was added by the response to the previous Office Action. However, the Examiner neither points out specific portions of the cited references nor provides his opinion with respect to the various claimed functions mentioned on page 36, Item b of the Office Action. Therefore, the Examiner's assertion is incomplete and thus improper. If the Examiner believes that these functions would have been obvious from the cited reference(s), the Examiner should point out specific portions of the cited reference(s) and/or provide his opinion.

Independent Claim 5 (Sasagawa)

The Examiner points out column 12, lines 17-52 of Sasagawa (see page 43, first paragraph, line 7 of the Office Action). In this recitation, column 12, lines 22-29 of Sasagawa disclose that an ingress node specifies an IP address corresponding to an output port group of an egress node in a final ER HOP TLV in a label request message

(i.e., to specify an IP address corresponding to any one of ports in the port group) and that the egress node specifies an output port in accordance with the IP address indicated in the final ER HOP TLV in the label request message and specifies a port group to which that port belongs. In this way, in Sasagawa, the egress node specifies the output port in accordance with the IP address. Therefore, as also pointed out in the response to the previous Office Action with respect to the Examiner's assertion that relied upon Rosen, the egress node of Sasagawa also performs an IP address lookup.

In contrast, the claimed egress edge routers retrieve outgoing interfaces using identifiers for showing the egress edge routers. In addition, Claim 6 employs MPLS labels for such identifiers. As a result, as also described in the second embodiment of the present application, the processes in the egress edge routers are limited to handling of the MPLS labels, and thus IP processes can be omitted. Therefore, it is possible to reduce the cost of the egress edge routers and to provide improvement in scalability. As a result, the processing amount can be reduced as compared to that by Sasagawa.

The Examiner asserts that "The motive to combine is provided by Sasagawa and is to avoid the inefficiency of having to use IP to route packets to the output port of the edge router..." (see page 43, second paragraph, lines 6-8 of the Office Action). However, column 1, lines 59-67, column 4, lines 13-20, and column 7, lines 43-50 of Sasagawa, which are pointed out by the Examiner on page 43, second paragraph, last line of the Office Action, fail to suggest the foregoing matters as asserted by the Examiner. Rather, Applicants believe that the Examiner's assertion is based on impermissible hindsight reasoning in view of knowledge of the present application and/or Applicants' arguments provided in the response to the previous Office Action.

<u>Independent Claim 12</u>

Claim 12 is directed to a computer program that corresponds to a cutting-through method recited in Claim 6. In addition, the Examiner's assertions newly presented for Claim 12 are similar to those for Claim 6. Therefore, the foregoing arguments with respect to Claim 6 can be applied to Claim 12.

<u>Independent Claim 16</u>

Summarizing the recitations on page 52, penultimate paragraph to page 53, first paragraph of the Office Action, Applicants believe that the Examiner asserts that the functions of the claimed cooperative control sections are present in a client or a provider of Xu and that in view of Rajagopalan it would have been obvious to move the functions of routers provided in the provider of Xu to routers provided in the client of Xu and to combine the former functions with functions of the routers provided in the client of Xu (see, for example, the phrase "... as a person of ordinary skill in the art... would have known that the optical network control instance [of] the optical ingress edge router of Xu could be moved to and combined with the ingress edge router functionality of Xu...").

However, the disclosure of Xu teaches away from combining Rajagopalan with Xu. Therefore, one having ordinary skill in the art would not have been motivated to move the functions of the provider of Xu to the client of Xu. Specifically, in Xu, control of circuit paths is performed to set communication lines in a provider network. If the movement were made in Xu as asserted by the Examiner, the functions of controlling circuit paths, which must be managed by "only" the provider, are also moved to the

client. This results in a problem in that it becomes possible for the client to unrestrictedly perform setting and changes to the communication lines in the provider network. Moreover, Xu employs the structure in which each provider network is shared by a plurality of client networks as shown, for example, in FIG. 1 of Xu. Therefore, from the viewpoint of security, one having ordinary skill in the art would not have modified Xu as asserted by the Examiner because such a modification allows one or more clients to easily change the setting of communication lines in the provider.

Independent Claims 18 and 19

The technical features recited in Claims 18 and 19 are included in Claim 16 discussed above. In addition, the Examiner's assertions newly presented for Claims 18 and 19 are similar to those for Claim 16. Therefore, the foregoing arguments with respect to Claim 16 can be applied to Claims 18 and 19.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: July 19, 2011

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